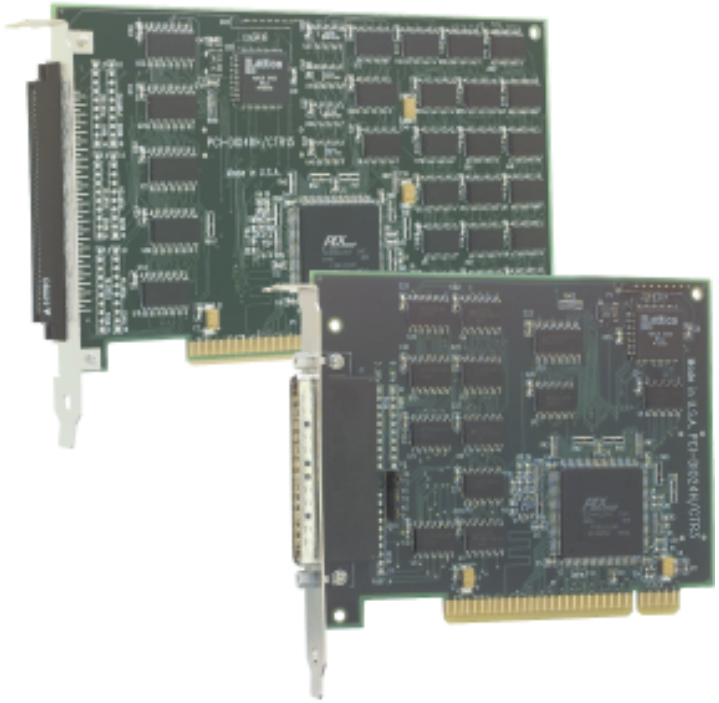
PCI-DIO24H/CTR3 & PCI-DIO48H/CTR15

Multifunction, PCI-bus Compatible, Digital I/O Boards with Both Parallel Digital I/O and Counter/Timers



Features

PCI-DIO24H/CTR3:

- 24 high current digital I/O bits
- Three 16-bit counters
- Software & Connector compatible with CIO-DIO24H/CTR3

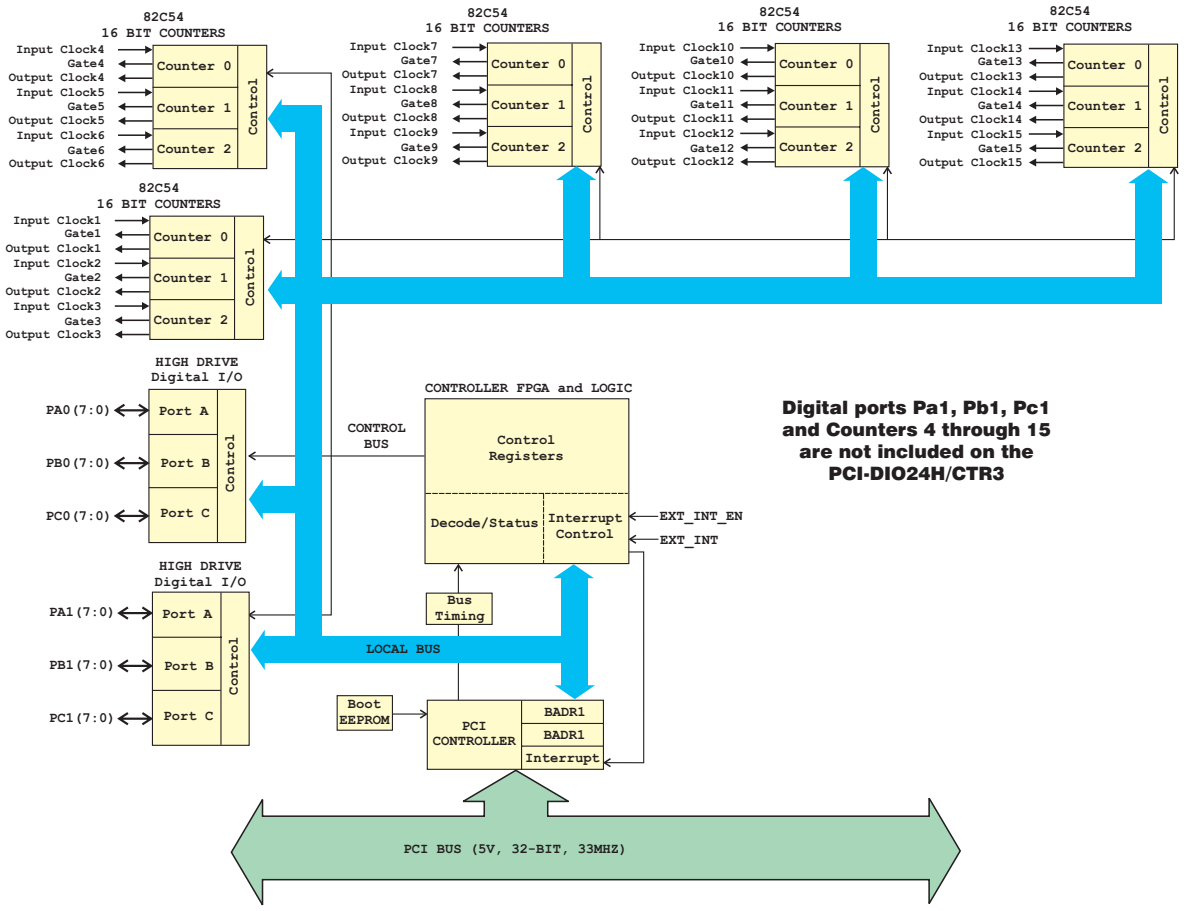
PCI-DIO48H/CTR15:

- 48 high current digital I/O bits
- Fifteen 16-bit counters

Common Features

- Compatible with a wide variety of Relay and SSR module racks
- Fully Plug-and-Play

Block Diagram



PCI-DIO24H/CTR3 & PCI-DIO48H/CTR15 Functional Description

The PCI-DIO24H/CTR3 and PCI-DIO48H/CTR15 are multifunction, logic level, digital I/O boards for PCI bus compatible computers. The boards offer a powerful combination of parallel digital and counter/timer functionality.

The PCI-DIO24H/CTR3 provides 24-bits of parallel digital I/O combined with three 16-bit counters. The PCI-DIO48H/CTR15 offers 48-bits of parallel digital I/O and fifteen 16-bit counters.

The PCI-DIO24H/CTR3 is connector and software compatible with the popular CIO-DIO24/CTR3. In addition, the parallel digital I/O of the PCI-DIO24H/CTR3 and PCI-DIO48H/CTR15 are compatible with the CIO-DIO24 and CIO-DIO48 series respectively.

The parallel digital I/O on both boards is provided in 24-bit *groups* based on an 82C55, mode 0 emulation. Each group provides an 8-bit port A and port B, and an 8-bit port C that can be split into independant 4-bit ports C-HI and C-LO. The 74S244 digital output drivers provide 64 mA sink and 15 mA source current capabilities. The 74LS373 input buffers offer the high standard input impedance of the 74LS series. On power up and reset, all I/O bits are set to input mode. Like all members of the 74LS series, unconnected inputs will typically float high. If you are using the board to control items that must be *OFF* on reset, you will need to install pull-down resistors. Provisions have been made on the board to allow users to quickly and easily install SIP resistor networks in either pull-up or pull-down configurations.

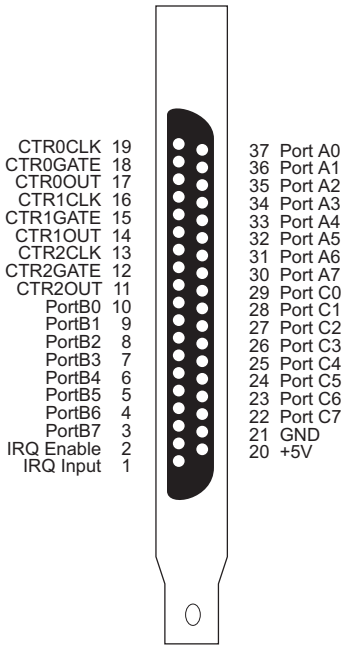
The counter/timer functionality of both boards is based on the 82C54, which provides three 16-bit down counters. The counter section provides access to the gate, clock and counter output of all three of the 82C54 counters. The PCI-DIO48H/CTR15 provides 15 counters (three 82C54s) while PCI-DIO24H/CTR3 provides a single 8254. The boards also provide a high stability, 10 MHz crystal controlled oscillator that may be connected to one or more of the counter inputs.

Both boards are completely plug-and-play and there are no switches or jumpers that you must set. All board addresses, interrupt levels, etc. are set by your computers plug-and-play software. A helpful jumper on the PCI-DIO24H/CTR3 provides a simple way to connect the on-board 10 MHz clock to CLK0 as well as cascade the counters.

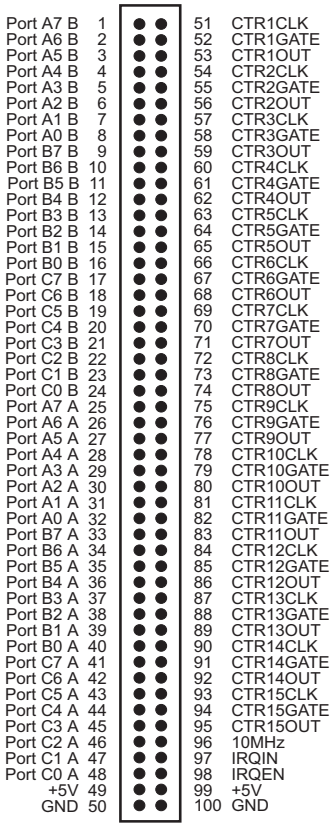
I/O Connector & Cables

All I/O signals of the PCI-DIO24H/CTR3 are brought through a 37-pin "D" connector. The (optional) C37FF-XX series cable brings all of the pins out and is suitable for use with all compatible screw terminal and signal conditioning accessory boards. The PCI-DIO48H/CTR15 offers a 100-pin connector. The C100FF-XX cable provides the interconnection spits the 100 pin connector into two 50-pin cables that are compatible with the CIO-MINI50 as well as a larve variety of our 50-pin compatible signal conditioning boards.

PCI-DIO24H/CTR3



PCI-DIO48H/CTR15



PCI-DIO48H/CTR15 Connector Diagram

Software

All PCI-DIO24H/CTR3 and PCI-DIO48H/CTR15 series boards come complete with ComputerBoards's powerful ***InstaCal***™ software package. ***InstaCal*** is a complete installation, calibration and test program for ComputerBoards data acquisition boards. Complete with extensive error checking, *InstaCal* guides you through installation and setup of your data acquisition board and creates the board configuration file for use by your program or application software package. *InstaCAL* is described in the software section of this catalog handbook.

Universal Library provides powerful, easy to use functions with extensive sample programs and greatly reduces your programming effort.

The boards are fully supported by ComputerBoards' powerful UniversalLibrary. Universal Library is a complete set of I/O libraries and drivers for all of our boards, for all Windows based languages. When using the Universal Library you can switch boards or even programming languages and the syntax remains constant. Universal Library is fully described in the software section of this handbook.

The PCI-DIO24H/CTR3 and PCI-DIO48H/CTR15 boards are fully supported by a wide variety of applications software packages including DAS-Wizard™, (and DAS-Wizard Pro™), HP VEE®, Labtech Notebook® and LabVIEW®. For further details of these, as well as a number of other software packages, please refer to the software section provided earlier in this handbook. Thirty-day time locked versions and demos of many of these and other software packages are available for downloading on our web site.

Specifications

Digital Input / Output

Number of channels	PCI-DIO24H/CTR3	24
	PCI-DIO48H/CTR3	48
Configuration	Groups of 24: 2 banks of 8, 2 banks of 4, programmable by bank as input or output	
I/O Device Type	TTL based 8255 mode 0 emulation Output: 74S244 Input: 74LS373	
Output High	2.4 volts min @ -15mA	
Output Low	0.5 volts max @ 64 mA	
Input High	2.0 volts min, 7 volts absolute max	
Input Low	0.8 volts max, -0.5 volts absolute min	
Power-up / reset state	Input mode (high impedance)	
Interrupts	INTA# - mapped to IRQn via PCI BIOS at boot-time	
Interrupt enable	External (IR ENABLE, active low, programmable through PCI9050-1; 0 = disabled, 1 = enabled (default)	
Interrupt sources	External source (IR INPUT), polarity programmable through PCI9050-1; 1 = active high, 0 = active low (default)	

Counter section

Configuration	82C54 w/three 16-bit down counters/82C54 PCI-DIO24H/CTR3 provides one 82C54 PCI-DIO48H/CTR15 provides five 82C54s
82C54 pinouts:	
Counter 0	
Source:	Available at connector
Gate:	Available at connector
Output:	Available at connector
Counter 1 -	
Source:	Available at connector
Gate:	Available at connector
Output:	Available at connector
Counter 2 -	
Source:	Available at connector
Gate:	Available at connector
Output:	Available at connector

Clock input frequency	10Mhz max
High pulse width (clk input)	30ns min
Low pulse width (clk input)	50ns min
Gate width high or low	50ns min
Input low voltage	0.8V max
Input high voltage	2.0V min
Output low voltage	0.4V max
Output high voltage	3.0V min

Clock source oscillator section

Oscillator type	10MHz crystal
Initial tolerance	±0.005%
Temperature coefficient	±50 ppm/°C

Power consumption

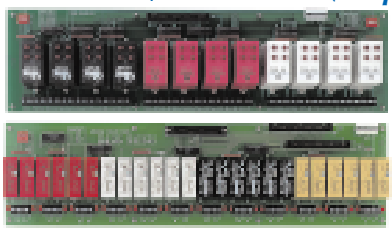
PCI-DIO24H/CTR3	+5V @ 625 mA typical, 960 mA max
PCI-DIO48H/CTR15	+5V @ 1395 mA typical, 1760 mA max

Environmental

Operating temperature	0 to 50°C
Storage temperature	-20 to 70°C
Humidity	0 to 90% non-condensing

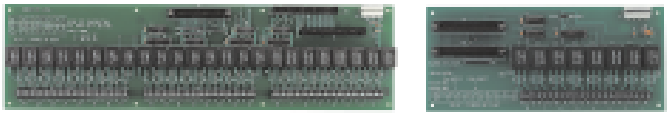
Signal Conditioning & Accessories

Solid State I/O Modules (see pages 96-98)



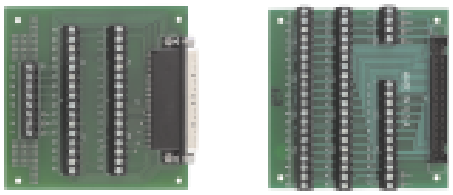
SSR-RACK08* 8 channel solid state I/O module rack.
SSR-RACK24* 24 channel solid state I/O module rack.
SSR-RACK48* 48 channel solid state I/O module rack.

Electromechanical Relays (see pages 94-95)



CIO-ERB08* 8 channel relay rack with 6 Amp, Form C relays
CIO-SERB08* 8 channel relay rack with 10 Amp, socketed and field replacable Form C relays.
CIO-ERB24* 24 channel relay rack with 6 Amp, Form C relays
CIO-SERB24* 24 channel relay rack with 10 Amp, socketed and field replacable Form C relays.
CIO-ERB24* 24 channel relay rack with 6 Amp, Form C relays
CIO-SERB24* 24 channel relay rack with 10 Amp, socketed and field replacable Form C relays.

Screw Terminal Accessory Boards & Cables (page 114)



CIO-MINI37* 37-pin, screw terminal board for PCI-DIO24H/CTR3
CIO-MINI50* 50-pin, screw terminal board for PCI-DIO24H/CTR3

* Items denoted with an asterisk are available with detachable screw terminals. These terminals simplify field wiring and board replacements. To specify detachable screw terminals add a /DST suffix to the part number (e.g. CIO-MINI37/DST or CIO-ERB24/DST).

Ordering Guide

PCI-DIO24H/CTR3	24-bit digital I/O, 3 counter/timer board for PCI-bus computers.
PCI-DIO48H/CTR15	48-bit digital I/O, 15 counter/timer board for PCI-bus computers.
CPCI-DIO24H/CTR3	24-bit digital I/O, 3 counter/timer board for CPCI-bus computers.
CPCI-DIO48H/CTR15	48-bit digital I/O, 15 counter/timer board for CPCI-bus computers.